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THE LITHIC TOOLKIT OF LATE NEOLITHIC TA' HAGRAT, MALTA

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SOMMARIO

Le isole maltesi sono state oggetto di interesse da parte degli studiosi per almeno due secoli, interesse che si è concentrato sui megaliti rinvenuti in tutte le isole. La particolare attenzione rivolta a questi monumenti ha, dunque, fortemente condizionato la nostra conoscenza della cultura materiale di queste popolazioni.
Questo studio sull'industria litica maltese è un progetto in corso volto ad analizzare sistematicamente i manufatti litici provenienti dai siti megalitici, che non vengono però considerati, nella maggior parte dei casi.
Si presenta un sistema semplice di catalogazione dei manufatti litici, in particolare di quelli che sembrano mancare di complessità, sia per la morfologia, sia per l'andamento del margine; questo approccio permette una migliore comprensione del kit di strumenti di una società insulare che, a differenza dell'Italia peninsulare, deve essere stata pesantemente influenzata dalla limitata disponibilità di materia prima.
Un aspetto essenziale di questa ricerca consiste infatti nell'interpretazione della selce di importazione, che rappresenta una finestra sui meccanismi socio-economici in funzione presso le comunità preistoriche locali.
La scelta del sito megalitico di Ta' Hagrat come caso-studio è stato stimolato dalla vicinanza di formazioni selcifere e dalla presenza di un ottimo punto di approdo in una baia nel lato occidentale dell'isola. Queste due variabili sono state prese come fattori determinanti che hanno portato ad un interessante complesso litico; emerge da questo studio un quadro chiaro della multi-variabilità del sito, che indica una precisa scelta insediamentale e complessi movimenti di materia prima nell'isola durante il neolitico antico.

PAROLE CHIAVE: *Industria litica, Malta, morfologia, spostamento.*

ABSTRACT

The Maltese Islands have attracted the attention of scholars for at least two centuries. This interest was mainly focused on the free-standing megalithic monuments that are found throughout the islands. Such a bias in favor of monuments has impacted severely our knowledge on the material culture of these people.
This study on Maltese lithics is an ongoing project that hopes to analyze bit by bit these artifacts recovered from megalithic sites but given no prior attention, except in rare instances. The present author also outlines a simpler method to categorize lithics, particularly those that tend to lack complexity, by morphology and edge motion. These traits allow a proper understanding of a toolkit of an island society, that unlike peninsular Italy must have been influenced heavily by the limited availability of raw materials. A crucial part to this study is indeed the interpretation of import flint lithics that are an eye-opener to the socio-economic mechanisms that were going on by local prehistoric communities.
The choice of the megalithic site of Ta' Hagrat as a study case is stimulated by the nearby location of local siliceous exposed beds and the occurrence of the best anchorage bay on the western side of the island. These two variables are observed as crucial factors that led to an interesting lithic assemblage. Indeed, a clear picture of site multi-variability emerges from this study indicating an intentional choice of site location and a complex scenario of raw material movement within the Islands during the Late Neolithic.

KEYWORDS: Lithics, Malta, morphology, movement.

INTRODUCTION

This study deals with a material culture as a means of comprehending movement of raw material across space[1]. In this case, the lithics recovered from Ta' Hagrat, a Late Neolithic site in Malta, is the chosen assemblage. The Maltese Islands exhibit a fascinating Late Neolithic culture which appears around 3,500 BC during the Mgarr-Ggantija phase and ends around 2,500 BC during the Tarxien phase. This culture is best characterized by the building of large megalithic structures, identified as 'ritual sites'. Unfortunately, these structures have always been visible in the Maltese landscape leading to the unceremonious clearing of these monuments. This leaves archaeologists with a large array of material culture lacking any context.

Fortunately, the recent re-study of material culture at sites such as Skorba, Ta' Hagrat and Tas-Silg is bringing about a wind of change in a country that has experienced little prehistoric research in the last decade. Amongst the research undertaken the present author has commenced an analysis of the Maltese prehistoric lithic industry. Through the analysis of the Maltese lithic tools, variability is becoming more evident in terms of toolkits between sites, which could indicate a specialized and individual use per site. This contrast between prehistoric sites is particularly distinct in the megalithic sites of Late Neolithic Malta, such as at Ta' Hagrat and Skorba. The impetus driving this paper is the presentation of the toolkit from Ta' Hagrat, a Late Neolithic megalithic site.

LITHIC TOOL STUDIES IN THE MALTESE ISLANDS

In the last two hundred years, the archaeology of the Maltese Islands has focused on the megalithic structures distributed throughout the archipelago. These structures are situated in clusters and have been noted in literature by several authors (Evans 1971; Trump 2002; Pace 2004). In 1776, J. Houel depicted the emerging ruins at Hagar Qim, where foreigners are seen recording measurements. This antiquarian interest led to the excavation of these magnificent monuments by inexpert individuals at a time when archaeology and its field methods were rudimentary. Therefore, to the great detriment of all material cultural, including lithics, these structures were cleared out unsystematically. Clearly this fact weighs heavily on the current attempt at re-evaluating the material culture from these sites.

Malta suffers from an ongoing study of the geological composition of the Maltese Islands, and a great deal of information vital to archaeologists is still obscure. British geographers, such as Spratt, Cooke and Hyde tackled Malta with the UK's geological framework in mind between the 19th and 20th century (Cooke 1837). Their use of

[1] The author would like to thank Heritage Malta for their continued accessibility at the National Museum of Archaeology, Malta. Due thanks are also expressed to Prof. A. Cazzella, Dott.sa G. Recchia and Prof. M. Moscoloni for their suggestions and encouragement. Thanks also go to Raquel Ozanich-Vella for her critical corrections and suggestions to the text. Finally, I thank Daniel Borg for being open to my ideas. This study was written during the tenure of a research grant financed by the Ministero Degli Affari Esteri, Italy at the Universita degli Studi di Roma "La Sapienza".

UK terminology led to the use of terms such as 'flint nodules'. Archaeologists followed suit in the use of these terms, especially due to the lack of geoarchaeological and lithic studies in Malta.

The first scholarly publication referring to lithic tools was written by Murray in 1923 where she published a brief article on selected lithic tools recovered at the Borg in-Nadur excavations led by herself and E. Guest (Murray 1923: 65-67). Keeping in mind the early period in which this article was written, Murray did an excellent job at annotating the location from which these lithic tools were recovered. However, no attempt was made at interpretation, probably due to the early stages of her study at the time. Succeeding this publication, no study was carried out on lithic tools. Indeed, barely any mention is made in this regard, except for furtive mentions of flint knives and blades at the several sites excavated by succeeding archaeologists.

Between the 1950s and 1960s, at the rise of processual thinking, J. D. Evans and D.H. Trump attempted to approach Maltese prehistoric material culture in a quantitative methodology by dealing with ceramic and architectonic typologies (Evans 1971; Trump 2002: 8). By the 1950s, many megalithic prehistoric sites had already been excavated locally. However, no coherent chronology or interpretation of the Maltese Islands was carried out in a comprehensive manner. Through funds from the Inter-University Council for Higher Education in the Colonies, J.D. Evans managed to write up *A survey of the prehistoric antiquities of the Maltese Islands*. Through the study of ceramics, this monograph proposed a relative chronology. Between 1958 and 1963, as curator of the National Museum of Archaeology, Trump undertook several excavations, including Borg in-Nadur, Bahrija and most significantly, Skorba. Fortunately by this time, the technique of radiocarbon dating was utilized for the dating of periods. As it turned out, the Maltese Islands were first colonized by 5,000 BC and not 3,000 BC as believed by Evans prior to C^{14} dating (Trump 2002: 9).

Despite this advance in the comprehension of the prehistoric chronology, lithic tools were still relegated to a study of lesser importance. A partial cause might be the fact that few prehistoric sites were excavated after Skorba in the 1960s. The only large scale prehistoric excavation after Skorba is the Xaghra Circle excavations from 1987 to 1994, in which the final publication is awaiting print. So far, only two Zebbug period tombs have been published (Malone *et alii* 1995: 323-325). Probably due to the limited Zebbug period discovery, no attempts were made by the archaeologists to create a typology or identify any technological trends. Recently, the "Missione Archaeologica a Malta" have restarted investigations around the prehistoric megalithic temple apse at Tas-Silg as from 2003. A review of the prehistoric artifacts recovered by the Italians in the 1960s has recently been published by Cazzella and Moscoloni (2005). A point of great interest is their recovery of several lithic tools from the Bronze Age phase of Borg in-Nadur.

Recently, the present author has analysed the lithics from Tas-Silg (South) and Skorba, as part of an MA study undertaken at the University of Malta. Both sites await proper publication in the near future. This present study, however, deals with a substantial lithic assemblage recovered from the Late Neolithic site in the village of Mgarr known as Ta' Hagrat.

LITHIC RAW MATERIALS IN PREHISTORIC MALTA

Geologically speaking, the Maltese Islands are relatively young. Sedimentary in formation, the geological horizons are restricted to five main levels: at the top is the Upper Coralline Limestone (*tal-pitkal*), Greensand (*rina*), Blue Clay (*tafal*), Globigerina Limestone (*franka*) and at the bottom the Lower Coralline Limestone (*zonqor*) (Pedley *et alii* 2002). Clearly, the basis of these geological layers is calcareous. There are also several sub-levels to these main horizons which can be referred to in other publications (Pedley 2002:13-22).

Early in the 18th century British geologists noted the occurrence of a silicate material within the Globigerina limestone bed (Cooke 1837: 157). According to Cooke this material was observed at Fomm ir-Rih, Wied Marsalforn, Wied Saqqajja,and Wied Hemsija (Cooke 1837: 157-158). Unfortunately the place-names Wied Saqajja and Wied Hemsija have been modified through the years and make place identification difficult. On the other hand, Fomm ir-Rih is an area relevant to this present study due to the close proximity to Ta' Hagrat. Gnejna refers to a bay that is flanked by two distinct promontories: Ras ir-Raheb and Ras il-Pellegrin. Between these two promontories, as indicated in the map, a silicate material was observed sporadically in areas where the Middle Globigerina level was exposed.

This coincides with Cooke's observation of the area. However, there is one vital difference. According to Cooke, this silicate materials was made up of "…larger masses composed of flint (silex), while the smaller nodular forms consist of chert (phtanite), which is an impure calcareous variety of flint…" (Cooke 1837: 159). This ambiguous reference to both chert and flint is also transcended in the Maltese language where the local silicate is known by the word *znied*, literally translated as flint, and no reference to chert or any other silicate material exists. Furthermore, there is a distinct difference between the use of the terms chert and flint in the archaeological sense. Unlike the British definition of chert as an inferior quality silicate, this article maintains that chert and flint are two distinct geological types that can be characterized by their depositional bed and quality of the raw material. In the case of the Maltese Islands, chert is located within a larger calcareous level whereas imported flint originates from chalk beds. Despite, this flimsy separation between these two terms we are still waiting on provenancing of silicate materials from the Central Mediterranean area.

Considering the sporadic distribution and generally inferior quality of Maltese chert, it is logical that voyaging trips between Malta and the 'outside' world included the acquisition of other lithic raw materials. In the case of Malta, these are limited to obsidian and flint. Obsidian, a glassy volcanic rock type (Rapp, Hill 1998: 123), appears to have been favored by Mediterranean prehistoric communities for functional and aesthetic reasons. Also, due to the mainstreaming of life-history ideologies being introduced to the archaeological scene, there is also a considerable interest in identifying artifact histories in the case of 'exotic' materials. Obsidian appears to fall under such pretenses in the light of the long distances that the raw material was distributed during the prehistory of the Central Mediterranean area.

So far, it appears that obsidian arriving in the Maltese Islands can be sourced to the Sicilian islands of Lipari and Pantelleria (Cann, Renfrew 1964: 111). These two islands supplied obsidian in the Central Mediterranean for several millennia during the Neolithic at varying fluctuations and distribution patterns. Obsidian commences at a sharp decline in distribution during the Late Neolithic, also referred to in Italian literature as the '*Eneolitico*'. Similarly, obsidian declines to negligible amounts by the beginning of the Maltese Late Neolithic, also referred to as 'Temple period' around 3,500 BC (Renfrew 1973) and ending during the Tarxien phase about the 2,500 BC.

Imported flint, on the other hand, has been noted by scholars in several studies. However, few have really attempted to question the provenance of this raw material. By utilising the most recent comprehensive work on prehistoric Malta, Trump's *Malta: prehistory and temples*, the imported flint is given a possible provenance from the Monti Iblei, a source repeated in literature (Trump 1966; Evans 1971; Trump 2002: 38). This belief is founded on the (possibly wrong) assumption that flint had a narrower distribution than obsidian. Therefore, the closest source being the Monti Iblei appears to have satisfied the assumption, and hence repeated throughout the literature. However, such a model appears peculiar and unlikely, particularly if we consider the array of flint sources in Sicily and the southern Italian peninsula. Unfortunately, so far the chemical characterization of flint sources in the Central Mediterranean is absent. However, it should be noted that several varieties of imported flint (in terms of colour, quality and texture) have been noted in Maltese prehistoric sites such as Skorba, Tas-Silg and even Ta' Hagrat. The possibility that other flint sources made their way to Malta during prehistory will be further expanded later on.

With such an ambiguous presence of silicate material, the logical question is how can we even differentiate between so-called chert and imported flint? In macroscopic terms, the easiest differentiation can be carried out in presence of cortical skin. Clearly, the cortex on a Maltese silicate would be calcareous whereas an imported flint is usually covered by a chalky cortical skin. However, in the absence of cortical skin the task becomes complex and subjective. Throughout the lithic analysis carried out by the present author, the following three criteria were evident:

– Even though colour is a subjective attribute (Luedtke 1978: 414) there seems to be a limitation in chert colours from Malta. Whereas imported flint found locally ranges from honey coloured to blackish to deep red, Maltese chert is mostly limited from greyish to black colours.

– When a flint lithic tool is held against a white light, the edges appear to be translucent. Chert, even when thin at the edges, is opaque.

– Texture can be also an indicator. Scratching a finger against a chert surface induces a granular feeling. This is most probably due to the calcareous surrounding in which chert was deposited. Flint produces no hindrance to a smooth feel on its surface, which is probably a result of a high percentage of SiO_2.

Clearly, the raw materials that entered the Maltese Islands during prehistory are limited. However, it would be overly simplistic to assume that these raw materials were arriving from the nearest landpoint in Sicily.

THE SITE: TA' HAGRAT

Ta' Hagrat is located in north-western Malta (fig. 1) within the village of Mgarr (Zammit 1929: 5). Ta' Hagrat is a place-name traced back to a 1487 document referring to massive stones known of by locals (Wettinger 2000: 270). Despite that the archaeological site is nowadays surrounded by housing, a significant sense of place still survives. The site overlooks a glacial valley that leads to the bay of Gnejna. Facing the Mgarr plateau is the higher ground of Bingemma ridge. To the north of the Mgarr area is Pwales plain, which leads into the bay of Ghajn Tuffieha. This area is known for its hydrological supply and agriculture.

Ta' Hagrat was first indicated in 1916 for its archaeological importance by architect C. Rizzo to T. Zammit, the director of the Museums Department at the time (Zammit 1929: 6). At the time, a prominent mound of soil and stones was referred to by locals as Ta' Hagrat. The local tenant described to the excavators how he had been quarrying stones for some years in order to level his field. Archaeological excavations were undertaken in 1923 by T. Zammit and the coordinator T. Sinclair (Zammit 1929: 6). The first campaign was followed by another excavation in 1925 and finally 1926 with the participation of L.J. Upton Way and Colt in the former and R.V. Galea and L.J. Upton-Way in the latter (Pace 2004: 149). Further interventions, on a smaller scale, were undertaken by J.D. Evans and D.H. Trump in 1954 and 1961 respectively, and were aimed at better understanding the chronology of this significant monument.

In the immediate vicinity to the north-east, at a higher elevation, the area of Skorba was also indicated by C. Rizzo as a possible megalithic building to T. Zammit (Zammit

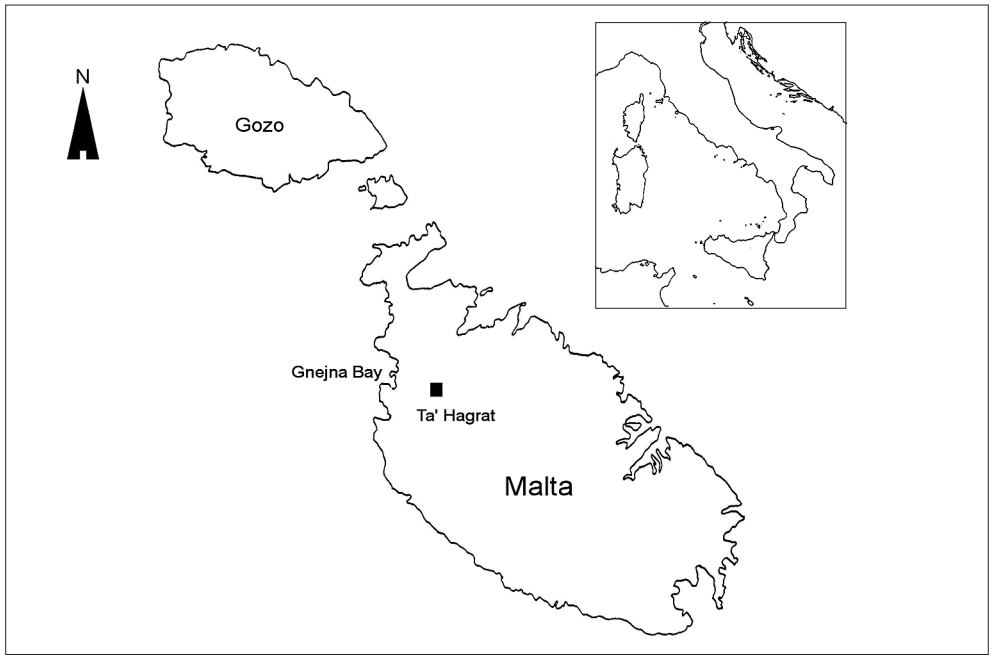


Fig. 1 – *Map of the Maltese Islands indicating the location of Ta'Hagrat.*

1929: 6). However, in the case of Skorba, excavations would only be undertaken in the 1930s by C. Zammit who confirmed the antiquity and significance of the archaeological remains. In 1961, D.H. Trump, the curator of the Museum of Archaeology at the time, undertook a series of excavations up until 1963 (Trump 1966). Similar to the Ta' Hagrat complex, a central megalithic structure was uncovered and dated to the Late Neolithic, also known as the 'Temple' period. But the excavators also uncovered a multi-phased village ranging from the Early to Late Neolithic.

Ta' Hagrat and Skorba are physically separated by a distance of about a kilometer, where Ta' Hagrat is located closer to the sea access of Gnejna about two kilometers to the west. Skorba sits on an elevated hill overlooking the town of Mgarr and Ta' Hagrat. This means that the two sites would have been in visual connectivity despite their distance. These two sites benefited from an array of natural resources in close proximity such as the chert outcrops in the Qleghja - Fomm ir-Rih area at around 3-4 km distance and natural clay slopes in Gnejna bay. Also, the exposed Globigerina limestone outcrops around Ta'Hagrat and Skorba would have allowed ample stone material for the construction of megalithic monuments.

THE TA' HAGRAT LITHIC ASSEMBLAGE

The excavations at Ta' Hagrat were carried out by various individuals over a span of three seasons (Zammit 1929) and this leads us to have no indication as to what layers were excavated and the actual provenance of artefacts, including the lithic tools and any scatters. Later on, during Evans' analysis of prehistoric assemblages as part of his survey of the Maltese Islands, he catalogued some lithic tools that were particularly diagnostic and featured in Zammit's report of 1929 (Zammit 1929: 16).

The megalithic structures at Ta' Hagrat are frequently observed as one of the earliest prototypes of the culture that would later become widespread throughout the archipelago (Trump 2002). The architectonic style of the structure appears crude in comparison to other megalithic sites, yet familiar in plan and general method of construction (Evans 1971: 30). The main building on the western side consists of three main apses in the shape of a trefoil (fig. 2) (Zammit 1929: 6). The entrance to the larger building is made up of an imposing entrance at the centre of a spacious open court about 15 m wide (Zammit 1929: 8). The doorway into the structure is accessed by three steps leading into a quadri-linear central court. This court is flanked on three sides by chambers, one of which appears to have led into the smaller eastern building.

The dating of this megalithic site was transformed significantly upon Evans' and Trump's re-evaluation of the prehistoric chronology (Evans 1971: 33). Whereas according to Zammit, the majority of the prehistoric pottery recovered was dated to the transition to the Bronze Age but actually belongs to the earlier prehistoric periods (Zammit 1929: 14). Infact, Evans analysis of the ceramic stored at the Museum stores indicate a site occupation from the Zebbug to the Tarxien phase with a minor presence noted during the Bronze Age. A large collection of ceramics was recovered from this site, as were lithics.

Zammit observes that "… flint-flakes and chippings were numerous; a good collection of scrapers, blades, burins and other implements were obtained. Chert implements were

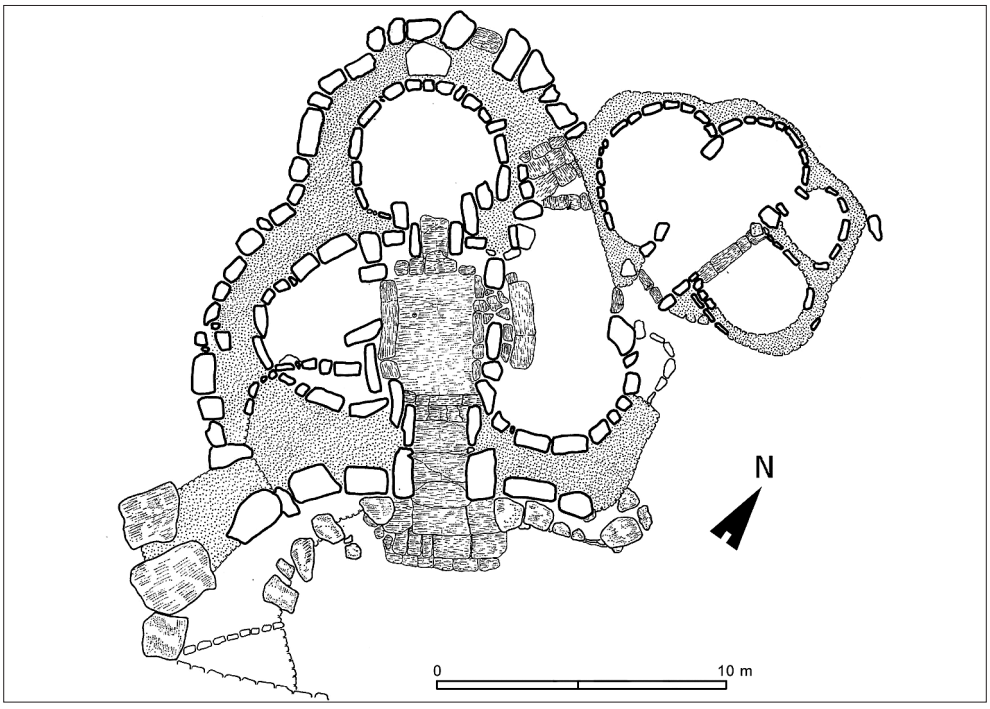
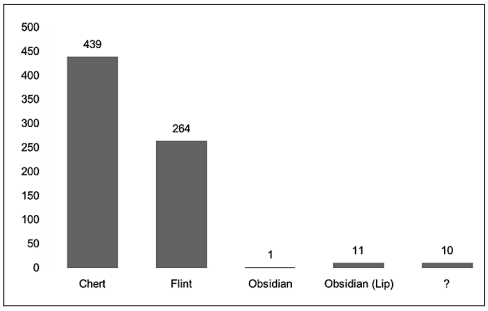


Fig. 2 – *Plan of Ta' Hagrat megalithic complex (after Evans 1971).*

just as numerous, but larger in size …" (Zammit 1929: 16). This short statement is misleading and flawed due to the misuse of the UK geological terms applied to the Maltese scenario. Referring to fig. 3, it is clearly visible that lithics made from the local chert (439) are at almost twice the quantity than the imported flint (264). On the other hand, obsidian mainly originates from Lipari and amounts up to 11. The amount of lithics recovered from the Ta' Hagrat complex is higher than those recovered from both 'temples' at Skorba. As expected, chert is recovered in highest amounts. At Ta' Hagrat the chert utilized for the manufacture of lithic tools is of a better quality than that utilized at Skorba. The latter indeed sees a drop in the quality of chert during the Late Neolithic, a factor that does not seem coincidental. Competition for local chert sources might explain the difference in the chert quality noticed at Ta' Hagrat and Skorba.

The imported flint at Ta' Hagrat was retrieved at half the quantity of chert, unlike both complexes at Skorba where flint scores a lower occurrence (fig. 4). Usually of very good quality, flint appears to have been selected prior to transportation to Malta. This inert property appears to have caught the attention of the prehistoric communities who differentiated the use of flint from the chert implements, as shall be seen later on. Additionally, there is a wide array of colors but the most common is the medium to light brown flint, observed at Monti Iblei. However, flint from other sources cannot be dismissed since at Ta' Hagrat (more than Skorba) the quality and colors observed are varied. The quantities at Ta' Hagrat completely shadow those found at Skorba, even in terms of size and state of discarding.



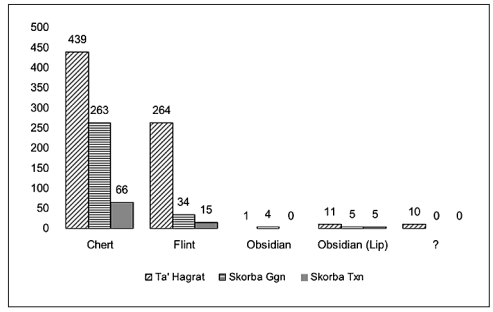


Fig. 3 – *Chart indicating the Ta' Hagrat raw material quantities.*
Fig. 4 – *Chart indicating the Ta' Hagrat and Skorba Late Neolithic raw material quantities.*

Finally, obsidian is the least present material found at Ta' Hagrat and even Skorba (fig. 4). Typical of Maltese prehistoric contexts, the few recovered obsidian lithics are fragmentary and evidently exhausted from prolonged use. As indicated by the early circulation and wide distribution of obsidian in the Central Mediterranean during the Neolithic, this raw material was valued more than any other lithic raw material available to communities (Robb and Farr 2005). Similarly, the limited availability and access to obsidian must have augmented the value of this raw material amongst the Maltese Islands. Obsidian from the island of Lipari remains the most represented type during the entire Neolithic.

An interesting aspect of the Ta' Hagrat lithic assemblage lies in the morphology types present. First of all, morphology refers to the general shape of the knapped lithic. Since lithic tools are manufactured in a conscious manner, their general morphology is also intentional, at least partially. Also, morphology is an ideal way of characterizing lithic assemblages particularly due to the more objective capacity of identifying shapes. The method utilized follows the typology set out by Andrefsky, with a few exceptions as indicated (Andrefsky 1998). The primary distinction made is between tools and knapped waste. The knapped waste is composed of all pieces discarded for their inadequacy for use. Therefore, their discarding is intentional and final. On the other hand, tools comprise all knapped pieces utilized for some task ranging from short to long life spans. However, my research in Maltese lithic tools has led me to deviate from Andrefsky's typological division of tools on two counts. Firstly, the division between bifacial and unifacial tools does not apply to the local scenario and is a North American facet of lithic technology. Also, the division between flakes and debitage is not easily discerned in the Maltese lithic assemblage due to raw material exploitation, and is referred to as expedient. Thus, generally lithics utilized as tools tend to lack the formal attributes such as edge retouching and dominant shapes.

Another manner of classifying these lithics, particularly the tools (*strumenti litici*) and unretouched tools (*manufatti non ritoccati*) is based on the macroscopic analysis of the edge types. Despite being somewhat more prone to subjective interpretation, this method of classification allows some type of parallelism with other lithic studies in the Central Mediterranean, which is mostly concentrated on type labeling. The lithics utilized for some type of task are classified simply according to mainstream types separated according to edge motion (tab. 1).

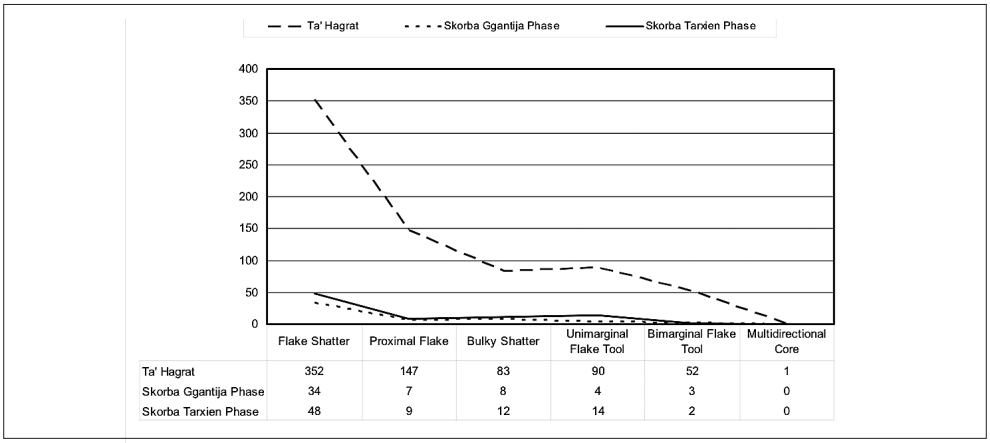
Scraping	Cutting	Serration	Perforating	Variable
Scraper	Blade	Backed Blade	Awl	Unretouched Flake
All round scraper		Knife	Burin	Cleaver
End scraper		Dagger	Drill	Unidirectional Core
Transverse end scraper			Projectile Point	Multidirectional Core
Side scraper				

Tab.1 – *Functional tool types proposed so far for the Maltese Islands.*

The definition of some of these terms in this study diverges from the traditional examples as follows. A tool classified as a scraper is irregularly retouched with no margin chosen as the predominant side. Such a tool is generally bulkier than other scrapers and chosen for its distinct steep edge. Another divergent definition is applied to the term transverse end scraper. Despite being in terms of retouch location an end scraper, this implement is distinguished due to its width being wider than its length. Unretouched flake is a term that appears difficult to parallel to Italian studies, albeit, *schegge utilizzabili* appears to be closest to the current definition. These flakes are distinct from debitage on the premise that one or more margins could have been utilized for a variety of tasks. No absolute confirmation of the use of these implements can be undertaken until edge wear analysis is carried out. In the case of Malta, these unretouched flakes are generally made from the local chert. Finally, the choice of the term cleaver is defined as a bifacial U-shaped tool meant to be hand-held. The retouched edge is usually at a right angle from the axis of the tool.

This assemblage will first be addressed through morphological classification, according to the types described above and later examined from the point of view of edge motion on the basis of macroscopic analysis.

Referring to fig. 4, an observed fall between flake shatter, proximal flake and bulky shatter is seen at an almost proportional manner. Flake shatter, defined as non-diagnostic pieces, makes up the bulk of the lithic assemblage analyzed at Ta' Hagrat (fig. 5). A difference between the assemblages at Ta' Hagrat and Skorba is that the quantities recovered from the so-called 'western' and 'eastern' temple are lower than those at Ta' Hagrat. Another difference between the two sites is the higher occurrence of imported flint at Ta' Hagrat during the Late Neolithic. Therefore, the minimal observation of proximal flakes, pieces with a distinguishable bulb of percussion and an intact striking platform, could also be a consequence of a higher occurrence of inferior quality chert at Skorba whereas at Ta' Hagrat imported flint was more available for whatever set of reasons. Bulky shatter, or as also referred by Andrefsky as angular shatter, is made up of fragments that tend to be about 0.8-1 cm thick and is more abundant than the Skorba counterpart and mostly made up of the local chert. However, unlike Skorba, the local chert observed at Ta' Hagrat is of a finer grain with less impurities indicating a better knowledge of the surrounding exposed raw material or territory control. The superior quantity of bulky shatter at Ta' Hagrat does lead to a suspicion that these pieces were collected outside of the larger building, maybe from some other part of the site. The reasoning behind this is that bulky shatter, especially



	Flake Shatter	Proximal Flake	Bulky Shatter	Unimarginal Flake Tool	Bimarginal Flake Tool	Multidirectional Core
Ta' Hagrat	352	147	83	90	52	1
Skorba Ggantija Phase	34	7	8	4	3	0
Skorba Tarxien Phase	48	9	12	14	2	0

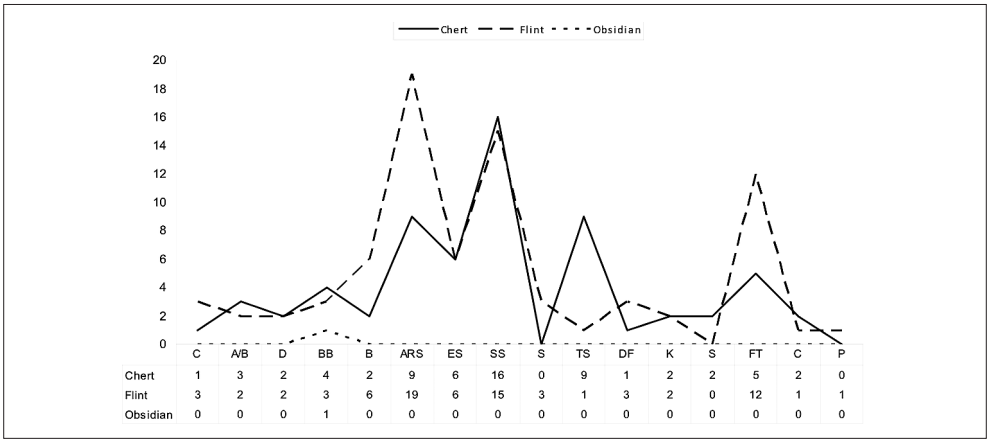
Fig. 5 – *Chart comparing the morphological tools recovered from the megalithic structures at Ta' Hagrat and Skorba ('western' and 'eastern' temple).*

if noted in substantial quantities, is indicatory of a knapping activity that is not only meant to cater for upcoming tasks, but also reductive and somewhat at a regular scale. Whereas the case for Skorba appears to indicate that any knapping undertaken was meant for daily tasks, no reductive activity was undertaken within the megalithic structure. Considering our lack of knowledge as regards to the context of recovery from Ta' Hagrat, this will have to remain a questionable aspect of the site.

Retouched and unretouched tools are a stark contrast between Ta' Hagrat and Skorba. Apart from the fact that, in terms of quantity, Ta' Hagrat has a higher number of tools observed than both structures at Skorba, we also have an almost equal level of uni and bi marginal tools observed. This is a significant aspect since it would appear from the Skorba structures that bimarginal tool technology is minimal. However, the data from Ta' Hagrat indicates otherwise. The majority of unimarginal and bimarginal tools are made up of imported flint, unlike Skorba. This trend goes to show that the approach towards local raw material was expedient and wasteful, whereas flint was knapped in a manner that reflects its availability. There also appears to have been an intentional set of uses, which flint might have been considered superior in comparison to the local chert.

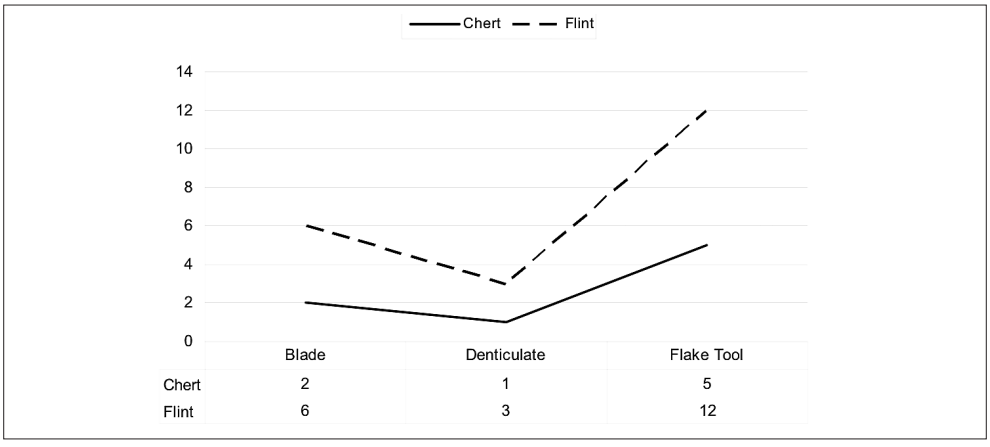
Edge functionality can be approached through the understanding of use motion, categorized in this study as perforating, cutting, scraping and variable. Perforating lithics tend to be small flakes with distinguishable 'beaks' that are frequently circular through extensive use. The flint examples have a distinct gloss present on the dorsal surface at the distal end which is an indication of drilling. However, the chert pieces tend to have been used as awls rather than drills with no gloss. None of these lithics show signs of hafting on a composite tool.

Under cutting motions at Ta' Hagrat were noted as backed and unretouched blades. The retouched backed blades were well-represented by chert examples, whereas unretouched blades were mostly made from the imported flint. This aspect can be explained as a consequence of the raw material. Considering that chert is not easily knapped in thin sections, one can suggest that this retouching applied to the backed



	C	A/B	D	BB	B	ARS	ES	SS	S	TS	DF	K	S	FT	C	P
Chert	1	3	2	4	2	9	6	16	0	9	1	2	2	5	2	0
Flint	3	2	2	3	6	19	6	15	3	1	3	2	0	12	1	1
Obsidian	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0

Fig. 6 – *Chart indicating the functional tools per raw material (C – core, A/B – Awl/burin, D – Drill, BB – Backed Blade, B – Blade, ARS – All Round Scraper, ES – Endscraper, SS – Sidescraper, S – Scraper, TS – Transversal Scraper, DF – Denticulate Flake, K – Knife, S – Sickle, FT – Flake Tool, C – Cleaver, P – Point).*



	Blade	Denticulate	Flake Tool
Chert	2	1	5
Flint	6	3	12

Fig. 7 – *Chart indicating the unretouched tools per raw material.*

blades was an attempt at producing a serrated edge, required for certain types of cutting. On the other hand, the imported flint is mostly seen in thin edges, usually less than 1 cm in maximum thickness, and no further retouching was required. However, unretouched edges become easily blunt. The eventual discarding of flint cutting implements was carried out once they snapped through use. Indeed, striking platforms tend to survive only on chert implements.

Similar to the Skorba megalithic structures, there is a higher quantity of scrapers than any other tools at Ta' Hagrat. However, at Ta' Hagrat there is a wider variety of scrapers including scrapers (fig. 8, *11*, *13*), all round scrapers (fig. 8, *2, 7*), end scrapers (fig. 8, *3, 8*), side scrapers (fig. 8, *6, 9, 17*) and transverse scrapers (fig. 8, *5, 12*). These scrapers are distinguished by the location of retouching along the lithic margins. In the case of all round scrapers, flint was observed at twice the quantity of chert examples.

The flint all round scrapers are mostly primary flakes broken during the reductive stages of cores and kept for their steep edges. Retouching was invasive and unifacial with flint scrapers being smaller than their chert counterparts and surely hand-held for use. The predominant chert scraper type falls under the category of side scrapers, which were hand-held implements meant for horizontal scraping motions possibly on harder textures (wood?). Finally, transverse scrapers, that are scrapers mostly made from chert and evidently expedient pieces broken through knapping.

The lithics falling under variable edge motions are more ambiguous than those at Skorba, considering that, despite an unfavorable morphology to certain uses, the lithics were utilized according to edge potential. A tool coined with the term denticulate flake is present at Ta' Hagrat in small quantities (fig. 8, *10*). These denticulate flakes are usually made from the local chert and tend to be thin pieces with a sharp edge that are further 'enhanced' by a notch or a series of notches. In the case of Skorba, this tool type was fairly common in the Red Skorba phase with a decline in quantities observed in the Late Neolithic contexts. These denticulate flakes appear to have been expediently produced and probably produced on demand. In the case of Ta' Hagrat, these denticulate flakes were mostly made from flint pieces that could have been discarded but instead were notched to make the most out of the limited availability of the raw material.

At Ta' Hagrat, as indicated by Zammit's brief interpretation on the lithic tools, some well preserved knifes and sickle blades were recovered. The group of four knifes, averaging at about 8.75 by 3.25 cm, made from flint (2) (fig. 8, *18, 19*) and local chert (2) were also included in the selected lithics' photography in Zammit's report (Zammit 1929: 17). These types of lithic tools were not found at Skorba. Interestingly, the flint implements' sizes averaged at about 10.75 by 2.4 cm whereas the cherts' averaged at about 6.75 by 4.1 cm, shedding a realistic impression of the different quality between the two raw materials. A superior quality lithic material allows the propagated force to run quicker, allowing a smooth termination. Logically, if a raw material contains a lower concentration of silicon dioxide and a higher occurrence of crystals, the force propagation travels less and 'fans out'. The two flint examples have unidirectional flake scars on the dorsal surface indicating the knapping of cores geared towards such knifes. The retouching of these knifes is unusually complex for Maltese lithics. All of them unifacial, the base of force propagation was the ventral surface with parallel irregular retouching applied through pressure flaking. This means that some type of indenter was being utilized for the application of edge retouching.

Sickles, on the other hand, are less present and made from the Maltese chert (fig. 8, *16*). Unlike Skorba, sickles are of a significant size and surely did not form part of a composite tool. Rather, they appear to have been sturdy and hand-held. The retouching of these lithics varies and is entirely typical of Maltese chert lithics. This edge retouching is always irregular, but in the case of Ta' Hagrat, this small group of sickles had notching present on one margin. As far as one can deduce macroscopically, such an edge would appear to be meant for fibre cutting. Only in one instance bifacial retouching was applied to a chert sickle and this appears to have been a consequence of the need of edge rejuvenation once the lithic became blunt.

The group of unretouched flakes identified as possible tools (*schegge utilizzabili*)

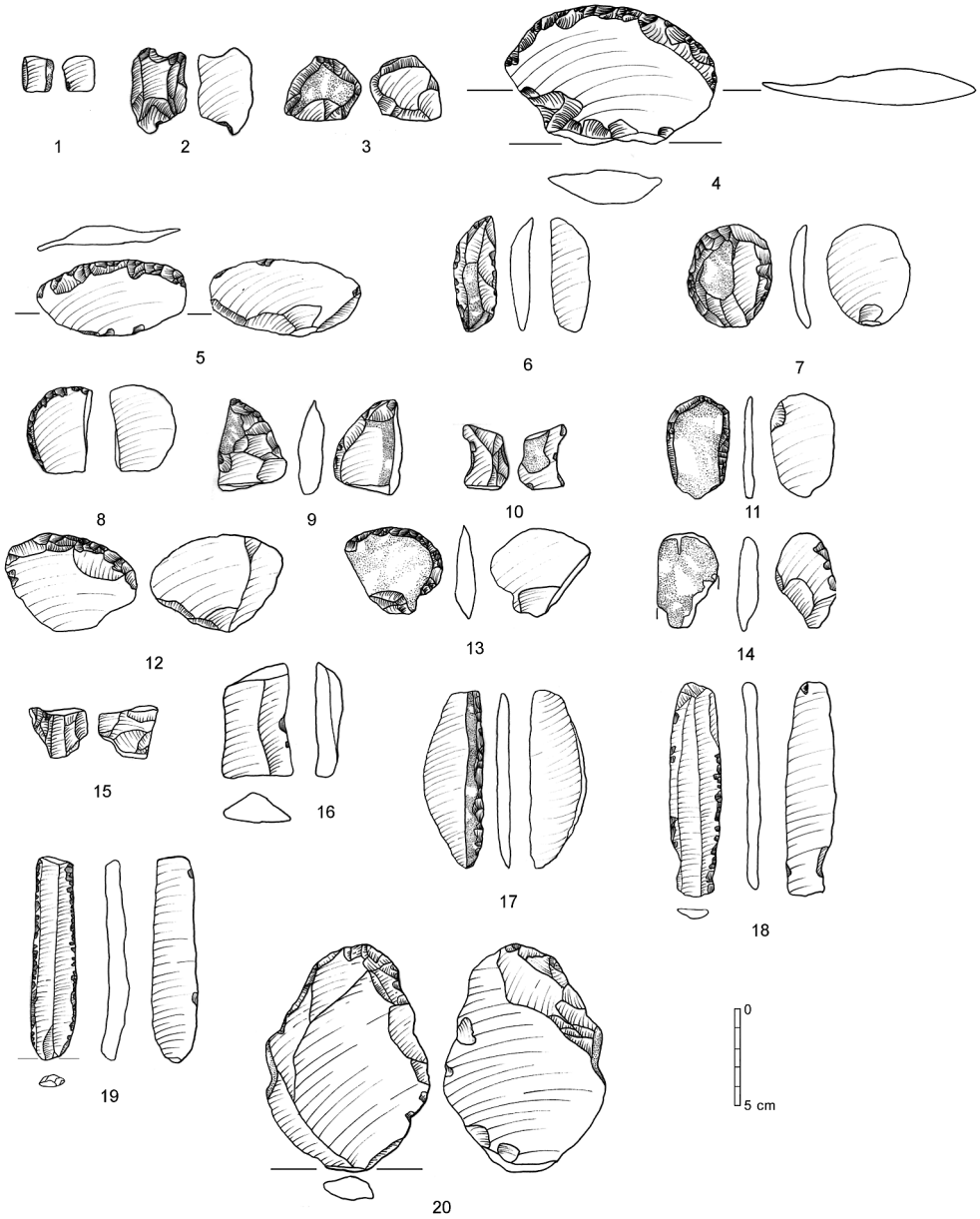


Fig. 8 – *Selected lithic tools from the Ta' Hagrat assemblage.*

at Ta' Hagrat is limited. Unlike Skorba, the majority of unretouched flakes identified are made from flint (fig. 8). Considering that only one of all these flakes (chert) is primary and the rest are all tertiary in terms of cortical skin, we would appear to be observing a reductive sequence that is expedient and aimed at removing excess flakes. Similar to the unretouched blades, these flakes tend to have only one usable edge.

These edges appear usually meant for cutting motions. However, other possible motions have been observed. Surely, this lithic type is a clear attempt at utilizing any lithic, particularly in the case of the limited flint.

Cleavers appear to have been a rare occurrence in Late Neolithic Ta' Hagrat, and even Skorba, possibly a consequence of opportunistic knapping. The three examples noted at Ta' Hagrat, made from chert (fig. 8, *20*) and flint appear to have been accidentally knapped during reductive activity but kept for their utility in heavy tasks. This lithics would have been hand-held, unlike an axe. Both tools have deep invasive irregular retouching applied to improve the edge use. However, the possible tasks are not clearly understood.

Another peculiar tool type recovered only at Ta' Hagrat is a leaf-shaped lithic tool broken in half. The edge retouching is irregular yet invasive and carried out unifacially. The quality of this tool stood out during the analysis, sparking the remote yet possible interpretation that this lithic tool is actually imported from outside Malta. Considering the edge retouching as an indicator of tool use, it is tempting to categorize this as a 'dagger', a tool type absent from Skorba. The lithic is made from a dark fine grey flint and broken through use. The implement would have been hafted on to a handle, probably made from organic material.

A minimal part of the assemblage at Ta' Hagrat is made up by cores. The only core recovered during the excavations is made from chert and measuring 8.5 cm by 10.3 cm. This core still retains cortical skin on both dorsal and ventral surfaces. Evidently at its earlier knapping stages, this core was discarded after a failed attempt at edge rejuvenation. Similar to the few other examples recovered at Skorba, this core was knapped in a multidirectional manner. An interesting comparison between the aforementioned knives and this chert core can be made. Particularly, one should note the close correlation between the length of the knives and the core. Secondly both of these knives have multidirectional flake scars on the dorsal surface, as is the case for the chert. The flint examples on the other hand are unidirectional indicating a varied knapping according to the raw material in question. Three flint fragments were observed as broken exhausted cores (fig. 8, *14, 15*). A particular implement (12901) is a broken pebble core measuring at about 4.8 by 3.0 cm. This lithic is one of two pieces that were earmarked as non-Sicilian flint, similar to Monte Gargano flint observed in Puglia, Southern Italy. Obviously the repercussions carried with this statement are not underestimated and further research undertaken should hopefully shed more light on this possibility. The final two cores made from flint were clearly utilized for bladelets and knapped through pressure force rather than percussion flaking.

OVERVIEW OF THE TA' HAGRAT ASSEMBLAGE

The assemblage analyzed from Ta' Hagrat proved to be a fruitful exercise in examining in-depth the lithic technology which Maltese prehistoric communities were partaking. Clearly, however, there is a possibility that the collection *per se* is slightly biased due to the method of excavation. Unfortunately we cannot discount that a certain selection of lithics was applied by the excavators, and therefore, our assemblage would be somewhat selective.

This study suffers mostly from the lack of spatial correlation between the lithics and their context of discovery. There is also the disadvantage that the monument is not clearly understood in its inner spaces. For example, the smaller eastern building is still ambiguous. Clearly we have a case of local re-adaptation to the general design idea as one sees at Hagar Qim and Tas-Silg. Thus, there is no way whatsoever to try and gauge the original location of these lithics, therefore, we are bound to treat this from a typological point of view.

The raw materials present at Ta' Hagrat were unexpectedly different. Despite the obvious abundance of chert in the immediate area, the material that was introduced into Ta' Hagrat was of a better quality than that at Skorba. This is surprising considering that so far I have only located exposed chert levels below the Qleghja hill near Bahrija and under Ras Il-Pellegrin in Fomm ir-Rih and Gnejna bay. In both circumstances, chert of a good quality were uncommon and far between. I do note with interest Zammit's note was "… chert is to be found native in the lower slopes of the Jneina Hill and therefore easily obtained by the workmen …" (Zammit 1929: 16) and admit that a possible source might have eluded me so far. The imported raw materials far exceeded my expectations, particularly flint. Recovered in quantities larger than those at Skorba, this raw material appears to 'peak' in the Late Neolithic. However, one has to question why we appear to have such a large quantity of flint during a time when the islands are supposedly 'isolated'. What if the islands were changing their areas of communications or raw material availability declined? As noted by Robb and Farr in a recent publication, the Central Mediterranean experiences a drop in Late Neolithic obsidian trade, where Lipari ceases to export the raw material in the quantities noted during the Diana phase (Robb, Farr 2005). Naturally, something else had to replace this empty niche in raw materials and the Maltese communities found flint to be more available. Our picture could be altered heavily by the suggestion that some Monte Gargano flint was making it to the Maltese Islands. We could be indeed witnessing a complete shift of social communications that scholars have recently observed during the Late Neolithic-Early Bronze Age transitions at Malta (Cazzella *et alii* 2007: 255). This shift would see the later Neolithic communities coming into contact with southern Italian communities and possibly even Aegean, as seen in the occurrence of Thermi ware in Malta.

The Maltese toolkit is difficult to explain due to the multi-variability noted between sites that have been so far analyzed. However, a few general observations can be made. The general morphology of the toolkit is primarily made up of shapeless pieces that, in the case of chert, tend to lack striking platforms. The flake scares on the dorsal surface are mostly multidirectional with a few examples of unidirectional flakes. These unidirectional flakes are mostly restricted to specific tool types such as knives and blades. This multidirectional knapping is probably a reaction to maximizing the imported resources which is also verified by the few cores recovered at Ta' Hagrat. Primarily, the need to economize on available weight on boats is expressed by the recovery of pebble cores, a trend also noted at Skorba and Tas-Silg (South). However, this choice of pebble cores must have reduced the size of cores and required unidirectional knapping. On the other hand, chert was readily available in the area and expectedly the cores were multidirectional and had shorter use-lives.

The toolkit was made up of typical Neolithic tool types associated to the sedentary lifestyle. Indeed, manufacture even at its best cannot be considered formal. However, the toolkit was heavily dependent on the raw material in question. The prehistoric communities clearly realized that the imported flint could better suit some of the needs unlike chert, as observed in the abundance of flint unretouched blades. Particularly when it comes to cutting and serration motions, flint could be knapped better and retouch rarely applied. Chert, on the other hand, tends to fracture at shorter lengths than flint and frequently required some type of edge retouching to further enhance its potential. Due to the evident limits in flint availability, pieces knapped during the early reductive stages, which tend to be bulkier and multidirectional, were kept and fashioned into scrapers. This trend is not observed in chert, where tool types were decided once the piece was detached and its edges noted as sufficient or not.

Unfortunately very little can be expressed on the eleven obsidian pieces recovered at Ta' Hagrat. As in Skorba, these fragments are evidently broken through prolonged use and tend to be below 4 by 1cm, following the general trend that obsidian had gone out of favour.

The way ahead is promising. It appears logical that further examination of the imported lithic raw materials into the Maltese Islands require in-depth characterization. There is also the need for critical thinking when it comes to raw material properties, the analysis of their technological and contextual properties should lead to a higher level of knowledge. Studies have also to be held in the light of the emerging multi-variability that these megalithic structures appear to have contained. Clearly, communities congregated around these structures and the use of internal space appears variable and intentional. This diversified activity could be also linked to the fragmentation the territory by competing communities. Clearly, prehistoric groups separated by a mere kilometer or two were accessing different resources and surely competition between them would be natural, if not mandatory.

CONCLUDING REMARKS

The current analysis of the lithics recovered from Maltese prehistoric sites is unlocking a window of information. This information is generating interest on the socio-economic and technological decisions that the Maltese communities were undertaking during the Late Neolithic. We are now gathering a tapestry of multi-variability between sites which were usually interpreted only through architectonic or ceramic typologies. Clearly, no megalithic 'temple' was running on the same set of activities and not on the same available resources.

Territory and landscape resources must have had a influential effect on how prehistoric communities lived differently (Bradley 2000: 41) even at Ta' Hagrat and Skorba, despite their close proximity. Their contacts with the outside world are now to be questioned and re-evaluated not on the premise of mere isolation but also cultural choices. In the meantime, lithics have a strong role to play in the re-evaluation of the Maltese prehistory.

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REFERENCES

ANDREFKY W.Jr. 1998 - *Lithics: macroscopic approaches to analysis*, Cambridge University Press: Cambridge.

BRADLEY R. 2000 - *Archaeology of natural places*, Routledge: Oxford.

BERNABÒ BREA L., CAVALIER M. 1991 - *Isole Eolie: vulcanologia, archeologia*, Ragusi Editore.

CANN J.R., RENFREW C. 1964 - The characterization of obsidian and its application to the Mediterranean Region, *Proceedings of the Prehistoric Society,* XXXX: 111.

CAZZELLA A., MOSCOLONI M. 2005 - Gli sviluppi culturali del III e II millennio a.C. a Tas-Silg, *Scienze dell'Antichità,* 12: 15-32.

CAZZELLA A., PACE A., RECCHIA G. 2007 - Cultural contacts and mobility between the South Central Mediterranean and the Aegean during the second half of the III millennium BC, in *Mediterranean Crossroads*, eds. Antoniadou S., Pace A., Pierides Foundation Publications: Athens.

COOKE J.H. 1837 - On the occurrence of concretionary masses of flint and chert in the maltese limestones, *Geological Magazine,* 346: 157- 160.

EVANS J.D. 1971 - *Prehistoric antiquities of the Maltese Islands*, The Athlone Press: London.

LUEDTKE B.E. 1978 - Chert sources and trace-element analysis, *American Antiquity,* 43(3): 413-423.

MALONE C., STODDART S., BONANNO A., GOUDER T., TRUMP D. 1995 - Mortuary ritual of fourth millennium BC Malta: the Zebbug tomb from the Brochtorff Circle (Gozo), *Proceedings of the Prehistoric Society,* 61: 303-345.

MURRAY M. 1923 - Stone implements from Borg en Nadur, *Man,* 23: 65-67.

PACE A. 2004 - The building of megalithic Malta, in *Malta before history: the world's oldest free-standing stone architecture,* ed. Cilia D., Midsea Books Ltd: Malta.

PEDLEY, H.M., HUGHES CLARKE, M., GALEA P. 2002 - *Limestone islands in a crystal sea: the Maltese Islands*, Publishers Enterprises Group: Malta.

RAPP G.JR., HILL C.L. 1998 - *Geoarchaeology, The earth-science approach to archaeological interpretation*, Yale University: New Haven.

RENFREW C. 1973 - *Before civilization: The radiocarbon revolution and prehistoric Europe*, Jonathan Cape: Britain.

ROBB J.E, FARR H.R. 2005 - Substances in motion: Neolithic Mediterranean "trade", in *The archaeology of Mediterranean prehistory*, eds. Blake E., Knapp B. A., Blackwell Publishing: Oxford.

TRUMP D. 1966 - *Skorba*. Oxford University Press: London.

- - : 2002 - *Malta: prehistory and temples*. Midsea Books Ltd: Malta.

ZAMMIT T. 1929 – Ta' Hagrat megalithic ruins at Mgarr, Malta, *Museum Annual Reports*: 5-25.